

# Alternatives to Fructose

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Living in 21st-century America, we are confronted with a myriad of sweet concoctions: candy, cakes, cookies, pies, soft drinks, breakfast foods, sauces, puddings, flavored yogurts, and ice cream beckon us at every turn. Sugars are not necessary components of our diets, but our taste for sweet foods, spurred by advertising, tempts us to consume these sweetened products.

For most people, sugars provide unneeded calories. Sweetened foods are typically low in vitamins, minerals, fiber, and other important elements, and they displace more nutritious foods in our diet. Sugars contribute to poor nutrition generally, cause dental cavities, and have been implicated in a host of diseases. Some sugars, especially those containing fructose, are more harmful than others.

In the few months since my article, "Concerns about Fructose," appeared in the July/August Co-op newsletter, the release of new information has only deepened those concerns. In addition to the likely role that fructose plays in diabetes, cardiovascular disease, high blood pressure, and more, new research shows that cancer cells may use fructose to enhance their proliferation.

Unlike healthy tissue from the same organs, cells of brain, breast, colon, liver, lung, pancreatic, testicular and uterine tumors have receptors that allow them to take up fructose and use it for their growth. Research has yet to show whether a diet high in fructose affects survival time in people with these types of tumors.

What's a health-conscious person to do? Avoiding sugars altogether, except those in whole fruits and vegetables, is probably the healthiest course of action, but it's not practical for many people, especially with the holidays approaching. What are some compromises that allow people to have an occasional sweet treat without endangering their health?

Fructose-free sugars can be used to create desserts and treats that satisfy a sweet tooth without adding unnecessary fructose to our diets. I've adapted a couple of recipes for holiday pies to get you started using these fructose-free sweeteners. All the ingredients can be found at the Co-op.

Other alternatives to fructose-containing sweeteners are stevia and the sugar alcohols, including xylitol and erythritol. We'll discuss these in an upcoming article.

## Fructose-free sugars

Glucose is a single sugar unit (monosaccharide) used by all body tissues as their primary energy source. Glucose is found naturally in fruits and other sweet foods, and it is a component of other sugars including sucrose (ordinary sugar), lactose (milk sugar), and maltose.

Starches, such as those in grains and potatoes, consist of long chains of glucose molecules. When we eat starchy foods, a combination of mechanical forces, enzymes, and acid breaks these chains into shorter pieces and finally into glucose, which is absorbed from the intestine.

Sweeteners can be manufactured from starchy foods using a combination of mechanical forces, enzymes and acids, similar to our own digestion process. The result is glucose (also called dextrose), corn syrup, rice syrup, and other grain sweeteners. In malted sweeteners, the grain is sprouted, producing its own enzymes that digest the starch.

Dextrose, corn syrup, rice syrup, and barley malt can be used in recipes in place of ordinary sugar, honey, molasses, and maple syrup (which all contain fructose). They provide the same number of calories as ordinary sugar, but are a little less sweet.

Like starches in the diet, fructose-free sugars do raise the blood glucose level, especially if eaten on an empty stomach. These sweeteners require insulin for their metabolism, so people with diabetes should use them with caution.

Consumers who are sensitive to gluten or sulfites should select their fructose-free sugars carefully. Barley malt syrup contains a small amount of gluten. Sulfites are found in some grain sweeteners; the labels are required by law to disclose the presence of sulfite if levels exceed 10 ppm.

Fructose-free sugar sweeteners available at the Co-op are: Wholesome Sweeteners Organic Light Corn

Syrup (a sulfite-free syrup made in Austria from non-GMO corn), Lundberg Sweet Dreams Organic Brown Rice Syrup, and Eden Organic Barley Malt syrup (a dark, molasses-like sweetener).

References: "Cancer cells slurp up fructose, US Study Finds," August 2, 2010, www.reuters.com/article/idAFN0210830520100802. V. Douard & R.P. Ferraris, "Regulation of the fructose transporter GLUT5 in health and disease," Am J Physiol Endocrinol Metab 2008 Aug; 295(2):E227-37. Epub 2008 Apr 8. [ajpendo.physiology.org/cgi/content/short/90245.2008v1](http://ajpendo.physiology.org/cgi/content/short/90245.2008v1).



Photos courtesy of Janis Walworth

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## Pumpkin Pie Filling

- 2 cups cooked pumpkin or one 15-ounce can of pumpkin (not pie filling)
- 3/4 c. evaporated milk (not sweetened condensed milk)\*
- 3 eggs
- 3/4 c. corn syrup
- 1/4 tsp. powdered ginger
- 1/4 tsp. allspice
- 1/4 tsp. mace or nutmeg
- 1/4 tsp. cinnamon

Mix all ingredients in a food processor (I do mine in two batches because my food processor isn't that big). Pour into your favorite pie crust and bake at 350° for an hour or until a knife stuck in the center comes out clean.

\*You can make an organic substitute for evaporated milk by mixing organic milk powder with an equal amount of water. To make this pie filling dairy free, use light coconut milk instead of evaporated milk.

## Pecan Pie Filling

I adapted my mother's pecan pie recipe, which calls for dark Karo syrup and a lot of sugar, resulting in a pie that's insanely sweet. Brown rice syrup is less sweet, making this version a reasonably sweet, still delicious pie. The barley malt syrup adds a rich molasses flavor. (If you want an insanely sweet pie, add up to 1 cup of dextrose or xylitol to the brown rice syrup and heat it until the crystals are dissolved. Let it cool before adding the other ingredients.)

- 1 c. brown rice syrup\*
- 2 tsp. barley malt syrup\*
- 4 Tbsp. butter, melted
- 1 tsp. vanilla
- 4 eggs
- 1 1/2 c. pecan halves and pieces

Mix all ingredients except pecans in a bowl or food processor. Add pecans and pour into your favorite pie crust. Bake at 350° for 45 minutes.

\*Tip: Oil your measuring utensils before using them for syrups.

Sweetener	Characteristics	Best Uses	Product Name
Corn syrup	Thin syrup; versatile flavor	Use instead of any kind of syrup	Wholesome Sweeteners Corn Syrup
Rice syrup	Thick like honey but less sweet	Use instead of honey	Lundberg Brown Rice Syrup
Barley malt syrup	Deep, rich flavor; contains gluten	Substitute for molasses	Eden Barley Malt Syrup
Dextrose	Looks and tastes like sugar	Use in place of sugar	Not available at the Co-op